

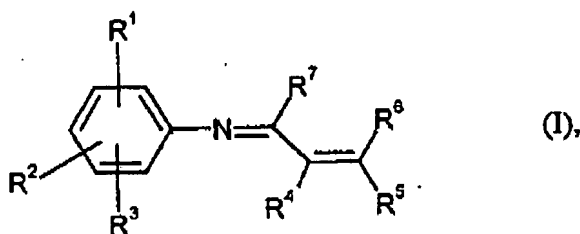
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Amendment to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application. Please amend the claims as follows:

Claim 1. (Currently Amended) A method for reducing the aging characteristics of a rubber vulcanizate comprising admixing an anti-aging agent, ~~based on organic compounds comprising azadiene groups of the general~~ having the formula (I)



wherein

R^1 represents hydrogen, straight-chain or branched C_1 - C_{12} -alkyl, C_1 - C_{12} -alkoxy-, C_1 - C_{12} -alkylthio-, C_1 - C_{12} -alkylamino, di- $(C_1$ - C_{12} -alkyl)-amino-, C_6 - C_{14} -aryl-, C_6 - C_{14} -aryloxy-, C_6 - C_{14} -arylthio-, C_6 - C_{14} -arylamino, C_2 - C_{12} -heteroaryl-, C_2 - C_{12} -heteroaryloxy-, C_2 - C_{12} -heteroarylthio-, C_2 - C_{12} -heteroarylamino,

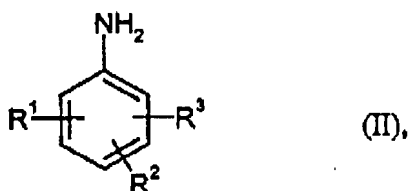
R^2 and R^3 are the same or different and represent straight-chain or branched C_1 - C_{12} -alkyl, C_1 - C_{12} -alkoxy-, C_1 - C_{12} -alkylthio-, C_1 - C_{12} -alkyl-amino, di- $(C_1$ - C_{12} -alkyl)-amino-, benzyl-, 1,1-dimethylbenzyl- or phenyl-,

or together form a 5-10-link aliphatic or aromatic, mono- or polynuclear ring system, which may optionally be interrupted once or more than once by heteroatoms selected from the group consisting of N, O and S,

R^4 to R^7 are the same or different and represent hydrogen, straight-chain or branched

C₁-C₁₂-alkyl-, C₅-C₁₂-cycloalkyl- or C₆-C₁₄-aryl-, mono- or polyunsaturated, olefinic or acetylenic, straight-chain or branched C₂-C₁₂-alkenyl-, C₂-C₁₂-alkinyl- or C₅-C₈-cycloalkenyl, or together form a 5-8-link, aliphatic ring system, which may optionally be interrupted once or more than once by heteroatoms selected from the group consisting of N, O and S, with at least one rubber monomer and a vulcanizing agent.

Claim 2. (Currently Amended) ~~A~~The method according to Claim 1, wherein the anti-aging agent is prepared by reacting substituted primary aromatic amines ~~of the having the~~ formula (II)



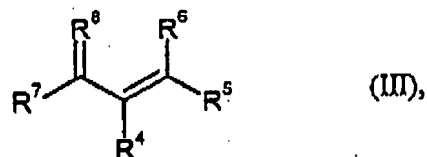
wherein,

R¹ represents hydrogen, straight-chain or branched C₁-C₁₂-alkyl, C₁-C₁₂-alkoxy-, C₁-C₁₂-alkylthio-, C₁-C₁₂-alkylamino, di-(C₁-C₁₂-alkyl)-amino-, C₆-C₁₄-aryl-, C₆-C₁₄-aryloxy-, C₆-C₁₄-arylthio-, C₆-C₁₄-arylamino, C₂-C₁₂-heteroaryl-, C₂-C₁₂-heteroaryloxy-, C₂-C₁₂-heteroarylthio- and C₂-C₁₂-heteroarylamino,

R² and R³ are the same or different and represent straight-chain or branched C₁-C₁₂-alkyl, C₁-C₁₂-alkoxy-, C₁-C₁₂-alkylthio-, C₁-C₁₂-alkyl-amino, di-(C₁-C₁₂-alkyl)-amino-, benzyl-, 1,1-dimethylbenzyl-, phenyl-,

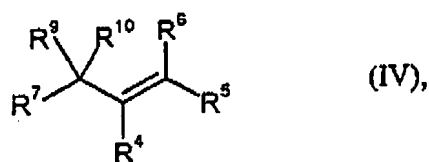
or together form a 5-10-link aliphatic or aromatic, mono- or polynuclear ring system, which may optionally be interrupted once or more than once by

heteroatoms selected from the group consisting of N, O and S, with optionally substituted conjugated 1,3-enones and/or 1,3-enals ~~of the~~ having the formula (III)



wherein, R^4 to R^7 are the same or different and represent of hydrogen, straight-chain or branched C_1 - C_{12} -alkyl-, C_5 - C_{12} -cycloalkyl- or C_6 - C_{14} -aryl-, mono- or polyunsaturated, olefinic or acetylenic, straight-chain or branched C_2 - C_{12} -alkenyl-, C_2 - C_{12} -alkinyl- or C_5 - C_8 -cycloalkenyl, or together form a 5-8-link, aliphatic ring system, which may optionally be interrupted once or more than once by heteroatoms selected from the group consisting of N, O and S.
and wherein R^8 represents oxygen, sulfur and NR^4 group

and/or their synthetic equivalents ~~of the~~ having the formula (IV)



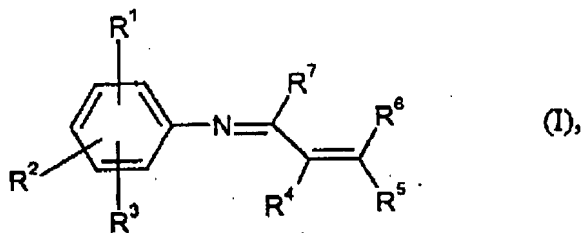
wherein,

R^9 and R^{10} are the same or different and represent hydroxy, chloro, bromo, straight-chain or branched C_1 - C_{12} -alkoxy, C_1 - C_{12} -alkylthio, C_1 - C_{12} -alkylamino or together form a C_2 - C_{12} -alkanedioxy- or C_2 - C_{12} -alkanediamino group.

Claim 3. Cancelled.

Claim 4. (Currently Amended) ~~A~~The method according to Claim 1 further comprising admixing least one additional anti-aging agent, wherein the mix ratio of anti-aging agents according to Claim 1 to at least one additional anti-aging agent is 10:1 to 1:10.

Claim 5. (Currently Amended) A rubber mixture comprising at least one rubber monomer, at least one anti-aging agent and a vulcanizing agent, ~~wherein the anti-aging agent is based on organic compounds comprising azadiene groups of the general~~having the formula (I)



wherein

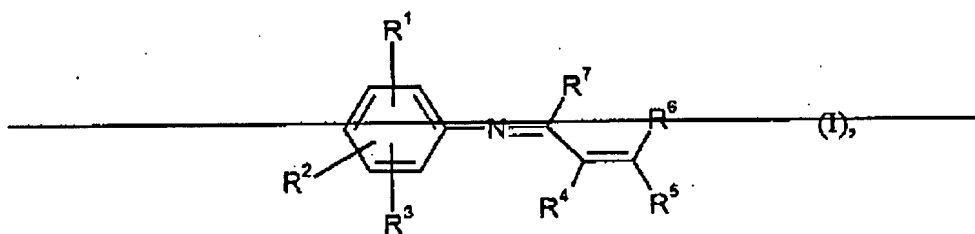
R¹ represents hydrogen, straight-chain or branched C₁-C₁₂-alkyl, C₁-C₁₂-alkoxy-, C₁-C₁₂-alkylthio-, C₁-C₁₂-alkylamino, di-(C₁-C₁₂-alkyl)-amino-, C₆-C₁₄-aryl-, C₆-C₁₄-aryloxy-, C₆-C₁₄-arylthio-, C₆-C₁₄-arylamino, C₂-C₁₂-heteroaryl-, C₂-C₁₂-heteroaryloxy-, C₂-C₁₂-heteroarylthio-, C₂-C₁₂-heteroarylamino,

R² and R³ are the same or different and represent straight-chain or branched C₁-C₁₂-alkyl, C₁-C₁₂-alkoxy-, C₁-C₁₂-alkylthio-, C₁-C₁₂-alkyl-amino, di-(C₁-C₁₂-alkyl)-amino-, benzyl-, 1,1-dimethylbenzyl- or phenyl-,

or together form a 5-10-link aliphatic or aromatic, mono- or polynuclear ring system, which may optionally be interrupted once or more than once by heteroatoms selected from the group consisting of N, O and S,

R^4 to R^7 are the same or different and represent hydrogen, straight-chain or branched C_1 - C_{12} -alkyl-, C_5 - C_{12} -cycloalkyl- or C_6 - C_{14} -aryl-, mono- or polyunsaturated, olefinic or acetylenic, straight-chain or branched C_2 - C_{12} -alkenyl-, C_2 - C_{12} -alkinyl- or C_5 - C_8 -cycloalkenyl, or together form a 5-8-link, aliphatic ring system, which may optionally be interrupted once or more than once by heteroatoms selected from the group consisting of N, O and S.

Claim 6. (Currently Amended) A process for preparing ~~a the~~ rubber mixture according to Claim 5, comprising mixing the at least one or more rubber monomer with ~~an the~~ anti-aging agent and ~~a the~~ vulcanizing agent, ~~wherein the anti-aging agent is based on organic compounds comprising azadiene groups of the general formula (I)~~



wherein

R^1 — ~~represents hydrogen, straight chain or branched C_4 - C_{12} -alkyl, C_4 - C_{12} -alkoxy, C_1 - C_{12} -alkylthio, C_4 - C_{12} -alkylamino, di- $(C_4$ - C_{12} -alkyl) amine, C_6 - C_{14} -aryl, C_6 - C_{14} -aryloxy, C_6 - C_{14} -arylthio, C_6 - C_{14} -arylamino, C_2 - C_{12} -heteroaryl, C_2 - C_{12} -heteroaryloxy, C_2 - C_{12} -heteroarylthio, C_2 - C_{12} -heteroarylamino,~~

~~R² and R³ are the same or different and represent straight chain or branched C₁-C₁₂-alkyl, C₁-C₁₂-alkoxy, C₁-C₁₂-alkylthio, C₁-C₁₂-alkyl-amino, di-(C₁-C₁₂-alkyl)-amino, benzyl, 1,1-dimethylbenzyl or phenyl,~~

~~or together form a 5-10-link aliphatic or aromatic, mono or polynuclear ring system, which may optionally be interrupted once or more than once by heteroatoms selected from the group consisting of N, O and S,~~

~~R⁴ to R⁷ are the same or different and represent hydrogen, straight chain or branched C₁-C₁₂-alkyl, C₅-C₁₂-cycloalkyl or C₆-C₁₄-aryl, mono or polyunsaturated, olefinic or acetylenic, straight chain or branched C₂-C₁₂-alkenyl, C₂-C₁₂-alkinyl or C₆-C₈-cycloalkenyl, or together form a 5-8-link, aliphatic ring system, which may optionally be interrupted once or more than once by heteroatoms selected from the group consisting of N, O and S.~~

Claim 7. Cancelled.

Claim 8. (New) The process according to Claim 1, wherein the anti-aging agent is (a) 1-N-(4'-N'-phenylamino-1'-phenyl)-2-methyl-1-azabuta-1,3-diene, (b) 1-N-(4'-N'-phenylamino-1'-phenyl)-2,4-dimethyl-1-azapenta-1,3-diene, (c) 1-N-(4'-N'-phenylamino-1'-phenyl)-1-azapenta-1,3-diene, (d) 1-N-(4'-N'-phenylamino-1'-phenyl)-1-azabuta-1,3-diene, (e) 1-N-(4'-N'-phenylamino-1'-phenyl)-3,5,5-trimethyl-1-azamethylenecyclohex-2-ene, (f) 1-N-(4'-N'-phenylamino-1'-phenyl)-1-azamethylenecyclohex-2-ene, (g) 1-N-(4'-N'-phenylamino-1'-phenyl)-4-phenyl-1-azabuta-1,3-diene, or (h) combination thereof.

Claim 9. (New) The rubber mixture according to Claim 5, wherein the anti-aging

agent is (a) 1-N-(4'-N'-phenylamino-1'-phenyl)-2-methyl-1-azabuta-1,3-diene, (b) 1-N-(4'-N'-phenylamino-1'-phenyl)-2,4-dimethyl-1-azapenta-1,3-diene, (c) 1-N-(4'-N'-phenylamino-1'-phenyl)-1-azapenta-1,3-diene, (d) 1-N-(4'-N'-phenylamino-1'-phenyl)-1-azabuta-1,3-diene, (e) 1-N-(4'-N'-phenylamino-1'-phenyl)-3,5,5-trimethyl-1-azamethylenecyclohex-2-ene, (f) 1-N-(4'-N'-phenylamino-1'-phenyl)-1-azamethylenecyclohex-2-ene, (g) 1-N-(4'-N'-phenylamino-1'-phenyl)-4-phenyl-1-azabuta-1,3-diene, or (h) combination thereof.

Claim 10 (New) The process according to Claim 6, wherein the anti-aging agent is (a) 1-N-(4'-N'-phenylamino-1'-phenyl)-2-methyl-1-azabuta-1,3-diene, (b) 1-N-(4'-N'-phenylamino-1'-phenyl)-2,4-dimethyl-1-azapenta-1,3-diene, (c) 1-N-(4'-N'-phenylamino-1'-phenyl)-1-azapenta-1,3-diene, (d) 1-N-(4'-N'-phenylamino-1'-phenyl)-1-azabuta-1,3-diene, (e) 1-N-(4'-N'-phenylamino-1'-phenyl)-3,5,5-trimethyl-1-azamethylenecyclohex-2-ene, (f) 1-N-(4'-N'-phenylamino-1'-phenyl)-1-azamethylenecyclohex-2-ene, (g) 1-N-(4'-N'-phenylamino-1'-phenyl)-4-phenyl-1-azabuta-1,3-diene, or (h) combination thereof.